

MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

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No. 9

E. B. KNOBEL, ESQ., PRESIDENT, in the Chair.

Louis Napoleon George Filon, M.A., Fellow of and Assistant Professor of Applied Mathematics at University College, London, Godwin House, St. Augustine's Avenue, South Croydon ;

Forest Ray Moulton, Ph.D., Instructor in Astronomy at the University of Chicago ; and

William Harrison Pearsall, Higher Grade School, Dalton-in-Furness, were balloted for and duly elected Fellows of the Society.

The following candidates were proposed for election as Fellows of the Society, the names of the proposers from personal knowledge being appended :—

Sri Rajah Ankithum Venkata Jugga Row Bahadur, Yambram Estates, Vizagapatam, India (proposed by E. B. Knobel) ; and

Ernest H. Shackleton, R.M.S. *Tintagel Castle* (proposed by Thomas Lewis).

Fifty-two presents were announced as having been received since the last meeting, including, amongst others :—

Memoirs presented to the Cambridge Philosophical Society on the occasion of the Jubilee of Sir G. G. Stokes, presented by

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the Society ; G. W. Hill, On the extension of Delaunay's method in the Lunar theory to the general problem of planetary motion, presented by the author ; W. E. Wilson, Astronomical and physical researches made at Daramona, Westmeath, presented by the author ; *Astronomischer Jahresbericht*, Band 1, enthaltend die Literatur von 1899, presented by the editor, Dr. W. F. Wislicenus ; Yerkes Observatory Publications, vol. i. (Burnham, General Catalogue of Double Stars), presented by the Observatory.

Description of the Durham Almucantar.

By Professor R. A. Sampson.

In the year 1884 Mr. S. C. Chandler set up at Cambridge, U.S.A., a transit instrument of a novel design, and made observations with it on time, latitude, and coordinates of stars for the space of about a year, in connection with Harvard College Observatory. A description of his instrument, its theory, and details of his observations are given by Mr. Chandler in vol. xvii. of the *Harvard Annals*. He named it Almucantar from the fact that it took transits across a horizontal circle, or almucantar, in place of across the meridian. Briefly, the principle of his design is to abolish adjustment and correction of the axis of rotation of his telescope by using the automatic action of gravity, and this he effects by clamping the telescope to a tray which floats on a trough containing mercury. Lateral motion of the float is prevented by stops, which are contrived so as not to interfere with the float taking up its own level, and accidental disturbance of the mercury is allowed to settle before the observation is made. If then the trough is rotated in azimuth, the axis of the telescope settles down to point always to the same horizontal circle on the sky, across which transits may be taken in the usual way. Every star which crosses this circle transits twice, once east and once west of the meridian, at azimuths which may be computed beforehand for the purpose of setting the instrument. From these we get two time observations, which determine the coordinates of the star, or, in the case of known stars, the instrumental errors.

Mr. Chandler's telescope was about 4 inches aperture and 43 inches focal length. His float was made of detached pieces of cherry wood, braced together with a brass frame, somewhat irregular in plan, like the letter **E** minus its middle stroke. The telescope hung over one side of the float, counterpoises being attached to the other side to keep it level. The whole floating piece weighed 31 lb. A second instrument, similar in all essentials to Mr. Chandler's, was made at the same time, and the two, I believe, are now in use, in the hands of Professor W. V. Brown of McKim Observatory, and Mr. Charles H. Rock-